

## REMARKS

### Rejections of Independent Claims

The Examiner rejects claims 1 – 4, 7 – 14, 17 – 20, 22 – 26, 28 – 30, 39 – 44, 47 – 49, 51, 52, and 55 under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,195,559 to Rapeli et al. (“Rapeli”). Rapeli describes a communication system having a mobile station with multiple antennas spaced around the mobile station. By spacing the antennas around the mobile station, Rapeli creates a directional antenna structure with multiple antennas pointing in different directions relative to the mobile station. The communication system dynamically controls the direction of an antenna beam associated with the overall antenna structure by selecting one or more of the antennas based on the position and/or orientation of the mobile station. When a single antenna is selected, the direction of the antenna beam is solely a function of the single antenna. However, when multiple antennas are selected, the direction of the antenna beam is a function of the combination of the selected antennas.

In rejecting claim 1, the Examiner asserts that Rapeli teaches *inter alia* “a first signal circuit operatively connected with said first antenna via a first signal path and a second signal circuit simultaneously operatively connected with said second antenna via a second signal path” (emphasis added). To support this position, the Examiner points to Figure 4 of Rapeli and contends that Rapeli teaches receive and transmit branches, which may correspond to the first and second signal circuits of claim 1. However, while the mobile device of Rapeli does include transmit and receive branches, Figure 4 clearly indicates that only one of these branches may be connected to the antenna structure at any given time (see switch 60). As such, even if the Examiner assumes that the transmit branch corresponds to the first signal circuit and the receive branch corresponds to the second signal circuit, there is nothing in Rapeli to teach or suggest that the transmit and receive branches may be simultaneously connected to any antennas of the antenna structure. As such, Rapeli does not teach “a first signal circuit

operatively connected with said first antenna ... and a second signal circuit simultaneously operatively connected with said second antenna," as required by claim 1. For at least this reason, Rapeli does not anticipate claim 1.

The Examiner rejects claim 26 for the same reasons applied to claim 1. Claim 26 is directed to a parallel tuning circuit for use in a multiple antenna system. As amended, claim 26 requires, *inter alia*, a first impedance matching circuit, "wherein the first impedance matching circuit is configured to create an impedance at an input of the first antenna substantially equivalent to an open circuit at the transmission frequency of the second antenna." This added limitation is similar to the limitations of dependent claim 18. Because claim 18 was also rejected as anticipated by Rapeli, the following arguments address the rejection of claim 18 as may be applied to amended claim 26.

On page 5 of the Final Office Action, the Examiner asserts that column 6, lines 11 – 15 of Rapeli teaches a first tuning circuit that creates an impedance for the first antenna substantially equivalent to an open circuit at the transmission frequency of the second antenna. In support of this, the Examiner points to the language in Rapeli that teaches that  $Z_{m1}$  is "used to match one antenna at a time to the transceiver circuit." However, careful scrutiny of Rapeli, particularly the cited section, shows that impedance  $Z_{m1}$  is used to match the impedance of the antenna structure only when one antenna is selected. Because the non-selected antennas are disconnected from the transmit or receive branches (see switches 50 – 54), there is no need for the tuning circuit of the selected antenna to be configured to act like an open circuit at the transmission frequency of a non-selected antenna. Further, there is no tuning circuit in Rapeli that performs this function.

In addition, because the antennas of Rapeli are spaced apart by substantial distances (see Figure 2B), even when multiple antennas are connected, the antennas are not susceptible to interference from each other. Therefore, there is no reason to even suspect that the

impedance matching circuits of Rapeli would be configured to operate as described in amended claim 26.

In light of the above, it is clear that there is nothing in Rapeli that teaches or suggests the specific idea of matching an impedance for one antenna so that the impedance is equivalent to an open circuit at the transmission frequency of another antenna. As such, contrary to the Examiner's assertions, Rapeli does not anticipate amended claim 26.

Regarding claim 39, the Examiner uses the same rejection used against claims 1 and 26. However, claim 39 requires “a second antenna disposed proximate the first antenna to within approximately one wavelength or less” (emphasis added). It is important to note that in rejecting a dependent claim with a similar limitation, the Examiner expressly admits that, “Rapeli does not specifically disclose the first antenna is disposed proximate said second antenna to within approximately one wavelength or less” (see item 9 on page 12 of the Final Office Action). As such, as conceded by the Examiner, Rapeli does not teach each and every limitation of claim 39. For at least this reason, Rapeli cannot anticipate claim 39.

Because the Examiner rejected dependent claims containing the limitation “a second antenna disposed proximate the first antenna to within approximately one wavelength or less” as unpatentable over Rapeli in view of U.S. Patent No. 5,596,313 to Berglund et al. (“Berglund”), Applicants will also address this rejection as it may be applied to claim 39. In supporting the rejection, the Examiner asserts that Rapeli teaches a multiple antenna system. While the Examiner concedes that Rapeli does not disclose a second antenna disposed proximate the first antenna to within one wavelength or less, the Examiner asserts that it would be obvious to one of ordinary skill in the art to use the closely spaced antennas (one wavelength apart) of Berglund in the multiple antenna system of Rapeli “in order to allow the security personnel carrying the portable monitor to further define the location operati.”

However, Rapeli explicitly teaches multiple antennas spaced around a mobile station to provide a controllable antenna structure for directing radiation in a desired direction (see at least Figure 2B, Summary, and column 4, line 48 through column 5, line 17). Because the antennas of Rapeli are intentionally spaced about the mobile station by significantly more than one wavelength, it is unclear why a skilled person would ever be motivated to position any of the antennas within one wavelength of each other. In fact, doing so would defeat the purpose of Rapeli because doing so would prevent the antennas from pointing in different directions relative to the mobile station. As such, the modification proposed by the Examiner would render the desired directional antenna structure of Rapeli inoperable for its intended use. Modifications that defeat the intended uses are not permitted under §103 and cannot be used to support the necessary *prima facie* showing.

For at least these reasons, there is no motivation to combine Berglund with Rapeli. Therefore, claim 39 is patentably distinct from the combination of Rapeli and Berglund.

As discussed above, independent claims 1, 26, and 39 define patentable subject matter over the cited art. Further, because dependent claims 2 – 25, 27 – 32, and 40 – 55 depend either directly or indirectly from the independent claims, the rejections of the dependent claims are rendered moot. Therefore, for at least the reasons discussed above, Applicants request the Examiner reconsider the rejections and allow claims 1 – 32 and 39 – 55.

#### §102 Rejections of Dependent Claims

Applicants also submit that at least claims 2, 7, 10, 18, 41, and 47 are not anticipated by Rapeli, even if their corresponding independent claims are.

Claim 2 requires that the multiple antenna system further comprise a third antenna connected with a third signal source via a third signal path. The Examiner asserts that Figure 4 teaches the third antenna connected to a third antenna source. However, as clearly shown in Figure 4 and discussed above, Rapeli at most shows two signal sources – a transmission

branch and a receive branch. There is nothing in Figure 4 or in the rest of Rapeli that teaches or suggests a third signal source, as required by claim 2. As such, Rapeli cannot anticipate claim 2.

Claim 7 claims that the first and second antennas are fabricated on a common dielectric material. The Examiner asserts that column 4, lines 52 – 54 of Rapeli teach this limitation. However, the cited section simply states that Figure 2B shows a controllable antenna structure “comprising a set of selectable antennae 30, 31, 32, 33, and 34, being ceramic disks, for instance.” It is clear from this statement and from Figure 2B, that each antenna is fabricated on separate ceramic disks. As such, Rapeli does not teach that the antennae are fabricated on a common dielectric, as required by claim 7. Therefore, Rapeli does not anticipate claim 7.

Claims 10 and 41 both claim that the first parallel tuning circuit increases isolation between the first and second antennas in multiple frequency bands. The Examiner asserts that column 4, lines 57 – 67 of Rapeli teach this limitation. However, the cited section simply describes how the spacing between the antennas affects electromagnetic coupling. Nothing in the cited section or the rest of Rapeli teaches or suggests that the tuning circuits provide isolation. In fact, because the antennas are spaced substantially far apart, there is no reason to even suspect that the impedance matching circuits of Rapeli would be configured to operate as described in claim 10 and 41. For at least this reason, Rapeli does not anticipate claims 10 and 41.

Claims 18 and 47 both claim that the first tuning circuit creates an impedance at an input of the first antenna substantially equivalent to an open circuit at the transmission frequency of the second antenna. As discussed above with regards to claim 26, Rapeli does not teach this limitation. Therefore, Rapeli does not anticipate claims 18 and 47.

### §103 Rejections of Dependent Claims

Applicants also submit that at least claims 15, 16, 45, and 46 are patentably distinct from the cited art, even if their corresponding independent claims are not.

Claims 15 and 45 require a second parallel tuning circuit selectively connectable in parallel to the second signal path. While the Examiner concedes that Rapeli does not specifically disclose a second parallel tuning circuit, the Examiner asserts that those skilled in the art would "appreciate that the teaching of Rapeli could be modified such as a second parallel tuning circuit selectively connectable in parallel to the second signal path without changing the scope and spirit of Rapeli's invention. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Rapeli in order to control the electromagnetic coupling in a second parallel tuning circuit."

This rejection is legally insufficient. First, the proffered motivation does not make any sense. The Examiner states it would be obvious to modify Rapeli because doing so would "control the electromagnetic coupling in a second parallel tuning circuit." Because tuning circuits are not used to control electromagnetic coupling in the tuning circuits, Applicants do not understand what the Examiner means by this statement.

Second, it is important to note that simply because a reference can be modified does not mean doing so is obvious. In other words, the mere fact that prior art can be modified to form a claimed invention does not make that modification obvious absent a showing that the prior art suggested the desirability of the modification. *In re Laskowski*, 871 F.2d 115, 117 (Fed. Cir. 1989); *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984). As made clear in column 6, lines 5 – 15 of Rapeli, the impedance matching requirements of the antenna structure of Rapeli are sufficiently met by  $Z_{m1}$  and  $Z_{m2}$ . As such, there is nothing in Rapeli to suggest a need for a second tuning circuit. Further, the Examiner has not indicated why the skilled artisan would be motivated to even add a second tuning circuit. As a result, it is clear that while Rapeli could be modified to include a second tuning circuit, there is nothing in the prior art to suggest the

desirability of such a modification. For at least these reasons, claims 15 and 45 are patentably distinct from Rapeli. Also, because claims 16 and 46 depend from claims 15 and 45, respectively, claims 16 and 46 are also patentably distinct from Rapeli. Applicants respectfully request reconsideration.

#### Premature Final Rejection

Applicants note that the Examiner rejected claims 1-32 and 39 - 55 under §102 and §103 in view of multiple references (Rapeli, Harzer, Nakanishi, and Berglund) in the Final Office Action dated 15 October 2004. However, in each of the past office actions, the Examiner relied on different references (Trikha, Michaels, etc.) to support his rejections. Because a rejection that differs from a previous rejection forms a new rejection, Applicants contend the Examiner has issued new grounds of rejection.

MPEP §706.07(a) states “second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant’s amendment of the claims nor based on information submitted in an information disclosure statement” submitted before the mailing of the final office action (emphasis added). The Examiner contends that the Applicants’ amendment necessitated the new grounds of rejection. However, the response dated 24 June 2004 to the previous office action dated 29 April 2004 did not include any claim amendments. Because the pending final office action presents new grounds of rejection, and because none of the rejected claims were amended in the previous response, Applicants respectfully submit that the final office action is premature and request withdrawal of the finality of the rejection.

#### Summary

In light of the above arguments, Applicants submit that claims 1 – 32 and 39 – 55 are allowable. Applicants respectfully request reconsideration and allowance of the claims. In

addition, Applicants note that the Examiner has already allowed claims 33 – 38 and 56. Therefore, Applicants respectfully request the Examiner allow claims 1 – 56 to move the application forward to allowance. Should any issues remain unresolved, the undersigned requests a telephone interview to expedite allowance and issuance.

Respectfully submitted,

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